1. What is the **best** way to describe the domain of the scenario below?

   Bridges on highways often have expansion joints, which are small gaps in the roadway between one bridge section and the next. The gaps are put there so the bridge will have room to expand when the weather gets hot. Assume the gap width varies constantly with the temperature. Suppose a bridge has a gap of 1.3 cm when the temperature is 22 degrees C and that the gap narrows to 0.9 cm when the temperature warms to 30 degrees C.

   A. Subset of the Integers

   B. Proper subset of the Real numbers

   C. Subset of the Rational numbers

   D. There is no restricted domain in this scenario

   E. Subset of the Natural numbers

2. A town has an initial population of 80000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	80027	80057	80095	80125	80147	80177	80215	80245	80267

   A. Non-Linear Power

   B. Logarithmic

   C. Exponential

   D. Linear

   E. None of the above

3. For the information provided below, construct a linear model that describes her total income, I, as a function of the number of months, x she is at UF.

   Aubrey is a college student going into her first year at UF. She will receive Bright Futures, which covers her tuition plus a $600

educational expense each year. Before college, Aubrey saved up $9000. She knows she will need to pay $1100 in rent a month, $50 for food a week, and $32 in other weekly expenses.

A. $I(x) = 9600x$

B. $I(x) = 9000x + 600$

C. $I(x) = 600x + 9000$

D. $I(x) = 9600$

E. None of the above.

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4. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the low-quality coffee beans h.

   Veronica needs to prepare 150 of blended coffee beans selling for $4.76 per pound. She has a high-quality bean that sells for $5.29 a pound and a low-quality bean that sells for $2.96 a pound.

   A. $C(h) = 2.96h$

   B. $C(h) = 4.12h$

   C. $C(h) = -2.33h + 793.50$

   D. $C(h) = 2.33h + 444.00$

   E. None of the above.

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5. What is the **best** way to describe the domain of the scenario below?

   Veronica needs to prepare 170 lbs of blended coffee beans to sell for $4.71 per pound. She has a high-quality bean that sells for $6.00 a pound and a low-quality been that sells for $3.25 a pound.

   A. Subset of the Rational numbers

   B. Proper subset of the Real numbers

   C. Subset of the Natural numbers

D. Subset of the Integers

E. There is no restricted domain in this scenario

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6. A town has an initial population of 50000. The town's population for the next 9 years is provided below. Which type of function would be most appropriate to model the town's population?

Year	1	2	3	4	5	6	7	8	9
Pop	49950	49900	49850	49800	49750	49700	49650	49600	49550

A. Exponential

B. Logarithmic

C. Linear

D. Non-Linear Power

E. None of the above

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7. For the information below, construct a linear model that describes the total time T spent on the path in terms of the distance of a particular part of the path *if we know that the time spent on each path was equal.*

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 5 mph, 11 mph when traveling down a hill, and 7 mph when traveling along a flat portion.

A. $0.434D$

B. $23.000D$

C. $385.000D$

D. The model can be found with the information provided, but isn't options 1-3

E. The model cannot be found with the information provided.

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8. For the information below, construct a linear model that describes the total time T spent on the path in terms of the distance of a particular part of the path *if we know that the time spent on each path was equal.*

   A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 4 mph, 9 mph when traveling down a hill, and 7 mph when traveling along a flat portion.

   A. $252.000D$

   B. $0.504D$

   C. $20.000D$

   D. The model can be found with the information provided, but isn't options 1-3

   E. The model cannot be found with the information provided.

9. Using the situation below, construct a linear model that describes the cost of the coffee beans $C(h)$ in terms of the weight of the high-quality coffee beans h.

   Veronica needs to prepare 250 of blended coffee beans selling for $5.05 per pound. She has a high-quality bean that sells for $5.60 a pound and a low-quality bean that sells for $3.58 a pound.

   A. $C(h) = 2.02h + 895.00$

   B. $C(h) = 4.59h$

   C. $C(h) = -2.02h + 1400.00$

   D. $C(h) = 5.60h$

   E. None of the above.

10. For the information provided below, construct a linear model that describes her total costs, C, as a function of the number of months, x she is at UF.

   Aubrey is a college student going into her first year at UF. She will

receive Bright Futures, which covers her tuition plus a $400 educational expense each year. Before college, Aubrey saved up $8000. She knows she will need to pay $700 in rent a month, $40 for food a week, and $56 in other weekly expenses.

A. $C(x) = 8400x$

B. $C(x) = 8400$

C. $C(x) = 796$

D. $C(x) = 796x$

E. None of the above.